

**CLAIMS**

1. Method of patenting at least one steel wire, comprising
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- a rise in temperature of the said at least one steel wire up to an austenitisation temperature of the steel,
  - an abrupt cooling, in a liquid medium, of the said at least one wire which

10 has reached the said austenitisation temperature, by passing the said at least one wire through at least one cooling liquid curtain in which the latter exhibits a turbulent flow oriented substantially transversely to the said at least one moving wire, with the obtaining of a cooling temperature situated below the austenitisation temperature and above the martensitic

15 transformation temperature, and

  - an isothermal maintenance of the said at least one steel wire at a perlitic transformation temperature up to the end of this transformation,
- 20 characterised in that it also comprises
- an adjustment of a number of above-mentioned successive curtains which is determined so as to obtain, by the said cooling in a liquid medium, the said perlitic transformation temperature to be maintained during the

25 isothermal maintenance step, as the above-mentioned cooling temperature, and

  - the above-mentioned isothermal maintenance directly following the cooling in a liquid medium.

2. Method according to Claim 1, characterised in that it comprises a spraying from the bottom of above-mentioned curtains in a rising turbulent flow.
- 5 3. Method according to Claim 2, characterised in that the upward turbulent flow curtains have a top and in that the method also comprises, from the said top and at least on one side of each rising turbulent flow curtain, a fall of liquid with turbulent flow through which the said at least one steel wire also passes.
- 10 4. Method according to Claim 3, characterised in that above-mentioned falls of turbulent-flow liquid coming from the top of two above-mentioned successive curtains cross at least partially where the said at least one steel wire passes.
- 15 5. Method according to any one of Claims 2 to 4, characterised in that it comprises an ejection of pressurised gas bubbles into a mass of cooling liquid, in a manner which is guided upwards, and an entrainment of the said liquid by the said bubbles in the form of the said sprayed liquid
- 20 according to the said upward turbulent flow.
6. Method according to any one of Claims 1 to 5, characterised in that the cooling liquid is water.
- 25 7. Method according to any one of Claims 1 to 6, characterised in that the wires to be patented have a cross-section with a diameter of less than 15 mm.
- 30 8. Method according to any one of Claims 1 to 7, characterised in that the pressure of the gas bubbles is greater than a column formed by the mass of cooling liquid.

9. Device for implementing the method according to any one of Claims 1 to 8, comprising

5 - a furnace (25) for austenitising the said at least one steel wire,

- means (23, 24) of driving the said at least one steel wire (3; 26) in movement,

10 - means (7-9, 14, 15, 16) of spraying at least one curtain of cooling liquid in which the latter has a turbulent flow oriented substantially transversely to the said at least one moving wire, in order to cool the latter in a liquid medium to the said cooling temperature situated below the austenitisation temperature and above the martensitic transformation temperature, and

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- a temperature maintenance chamber (31) for the wires which have reached the said perlite transformation temperature,

characterised in that it also comprises

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- means (22) of adjusting the number of successive curtains of cooling liquid to be passed through by the said at least one moving wire in order to reach the said perlite transformation temperature, by way of cooling temperature, and

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- an arrangement of the temperature maintenance chamber directly at the exit from the curtain situated furthest downstream with respect to the movement of the said at least one wire.

30 10. Device according to Claim 9, characterised in that it comprises a tank (1) containing the cooling liquid which is arranged below said at least one

moving wire (3; 26) and in that the means (7-9, 14, 15, 16) of spraying the above-mentioned liquid curtains spray these from the tank in an upward turbulent flow.

- 5 11. Device according to Claim 10, characterised in that it also comprises, above the said at least one moving wire, deflector means (20, 21) which divert the upward turbulent flow of the above-mentioned liquid curtains towards at least one side of each curtain so as to form from there at least one turbulent-flow fall of liquid through which the said at least one steel  
10 wire passes.

12. Device according to one of Claims 10 and 11, characterised in that the temperature maintenance chamber (31) is mounted so as to be able to move horizontally over the tank (1) according to the number of liquid  
15 curtains in service.

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